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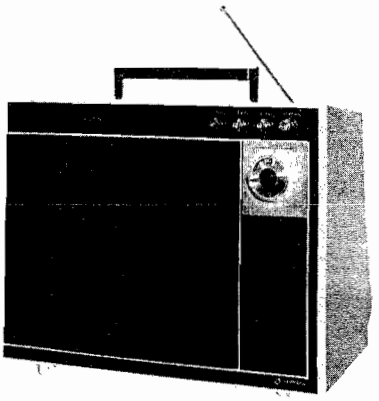
Teleton

Solid State 12-inch Portable TV

MODEL SWP 3000

SERVICE MANUAL

TELETON



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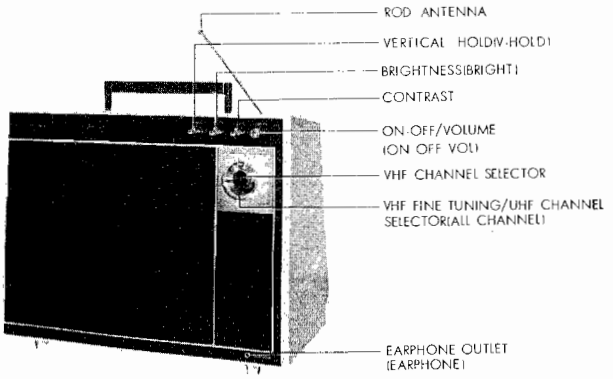
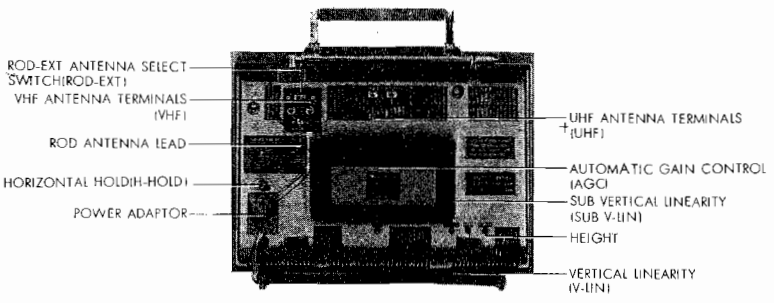
1. SPECIFICATIONS

Power supply :	220-volt AC, 50/60 Hz.
	or 12-volt DC from battery
Power requirement :	AC 30 watts
	DC 13watts
Channels :	VHF channels 2-12
	UHF channels 21-69
Input impedance :	300 ohms (Ext.)
Intermediate frequencies :	
Picture	38.9 MHz
Sound	33.4 MHz
Audio output	1 watt
Speaker :	7 ×18 cm
Picture tube :	12-inch, 90°deflection, tinted, implosion protection, 310DWB4
Semiconductors :	
Transistors	29
Diodes	22
Thermistors	4
Varistor	1
Cabinet dimensions :	46.4 wide × 27.7 high × 19cm deep
Net weight :	10Kg

2. CONTROLS





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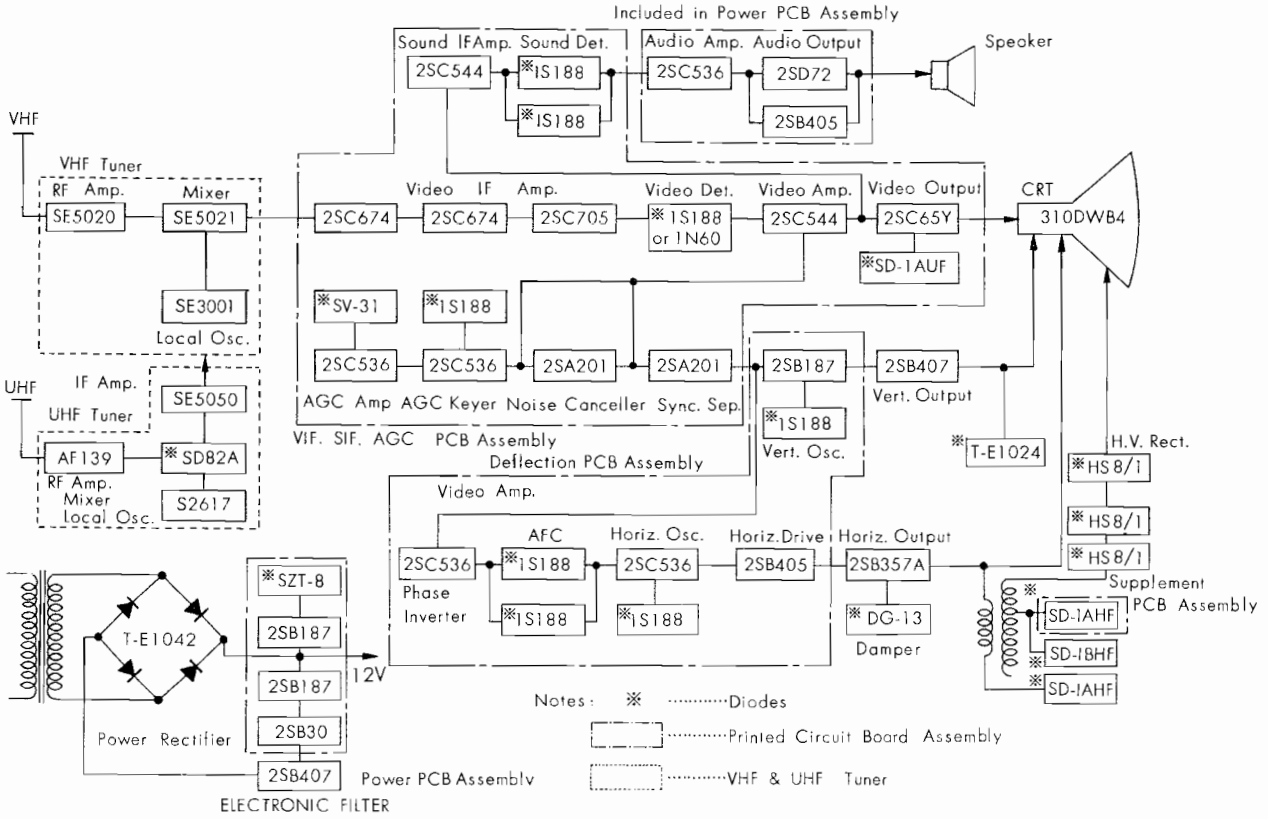
3.BLOCK DIAGRAM



4. DISASSEMBLY INSTRUCTIONS

Removing Chassis (See Fig. 2)

1) Pull off all knobs ①

2) Remove cabinet back.

1. Disconnect power adaptor.
2. Remove 4 screws ② from cabinet back ③ with a phillips screwdriver.
3. Pull the cabinet back gently and disconnect antenna plugs ④.
4. Remove cabinet back ③.

3) Disconnect high voltage tip, sound output lead and picture tube socket.

4) Remove chassis.

1. Remove 4 screws ⑤ from chassis with a phillips screwdriver.
2. Remove 2 screws ⑥ from control plate a Phillips screwdriver.
3. Slightly loosen a screw ⑦.
4. Pull out chassis together with deflection yoke.

Removing picture Tube (See Fig. 2)

1) Remove chassis (see above).

2) Remove nut ⑧ holding CRT mounting wire.

3) Remove screw ⑨ fixing CRT mounting bracket.

4) Lift out picture tube.

Note: The picture tube is implosion-proof; replace with an identical tube.

Removing Printed Circuit Board Assembly

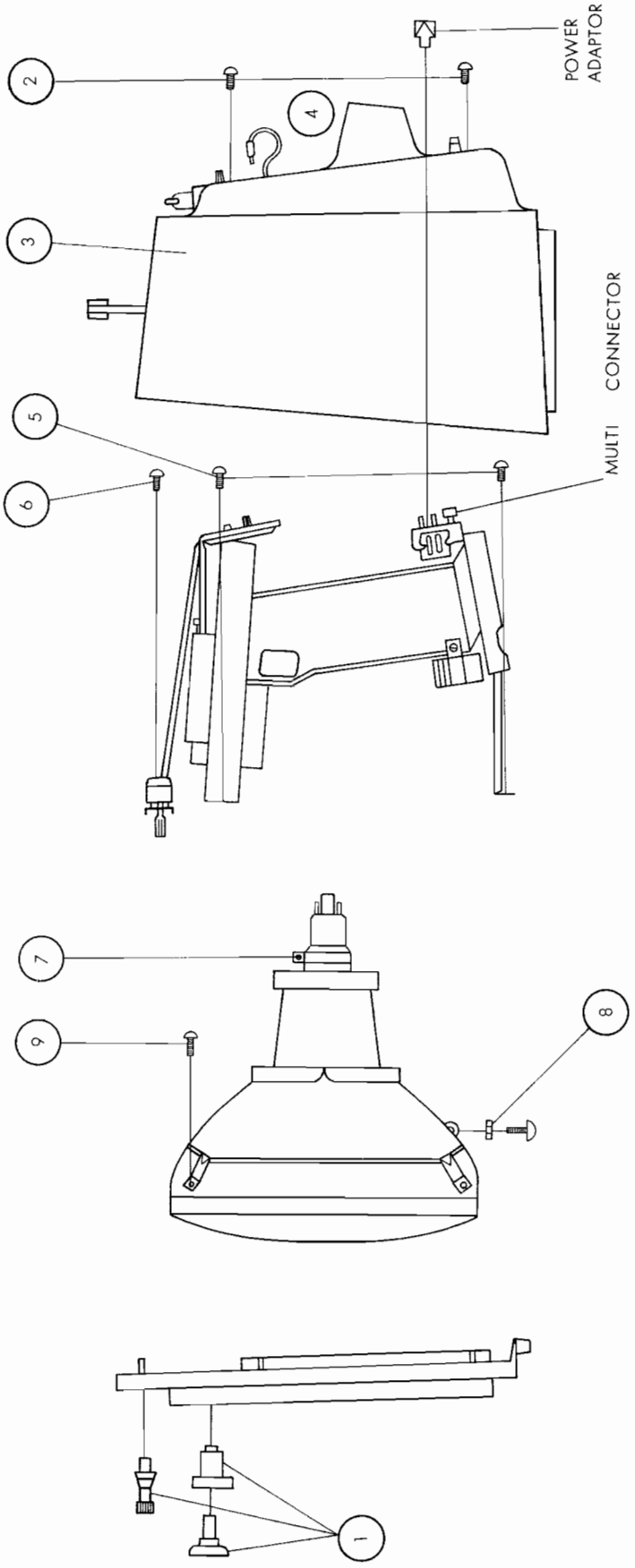
1) Remove cabinet back (see above).

2) Disconnect multi-adaptor, VIF input cable and video amplifier output lead.

3) Remove printed circuit board stopper screw.

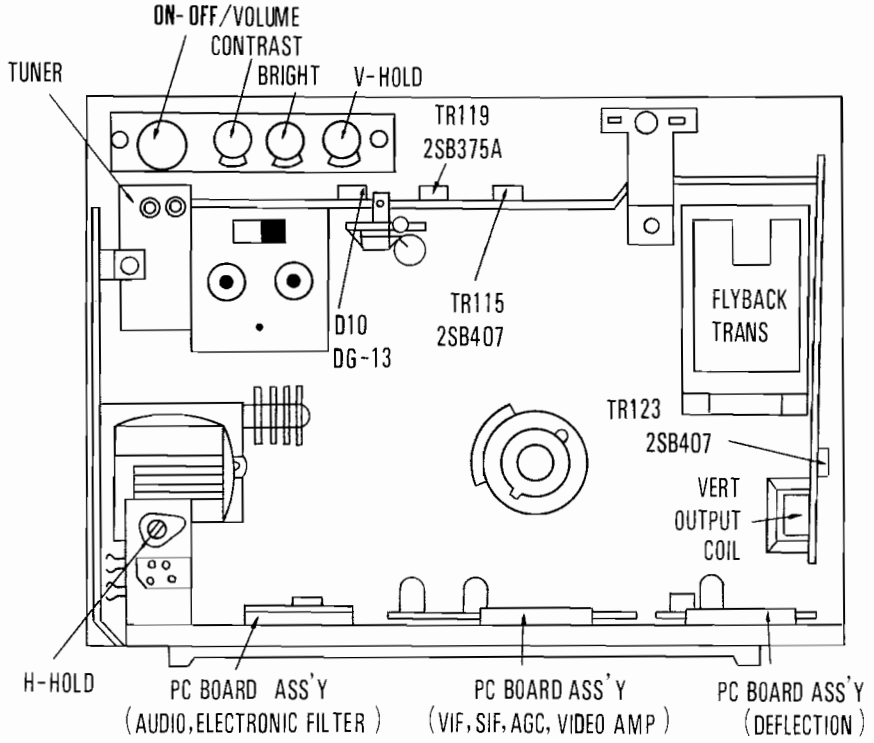
4) Pull out printed circuit board.

5) To remove signal P.C.B., the IF input plug must be disconnected.


POWER ADAPTOR
2
4
3
MULTI CONNECTOR
5
6
7
9
8
1

5. PARTS LOCATION

CHASSIS BACK VIEW



TRANSISTOR LOCATION

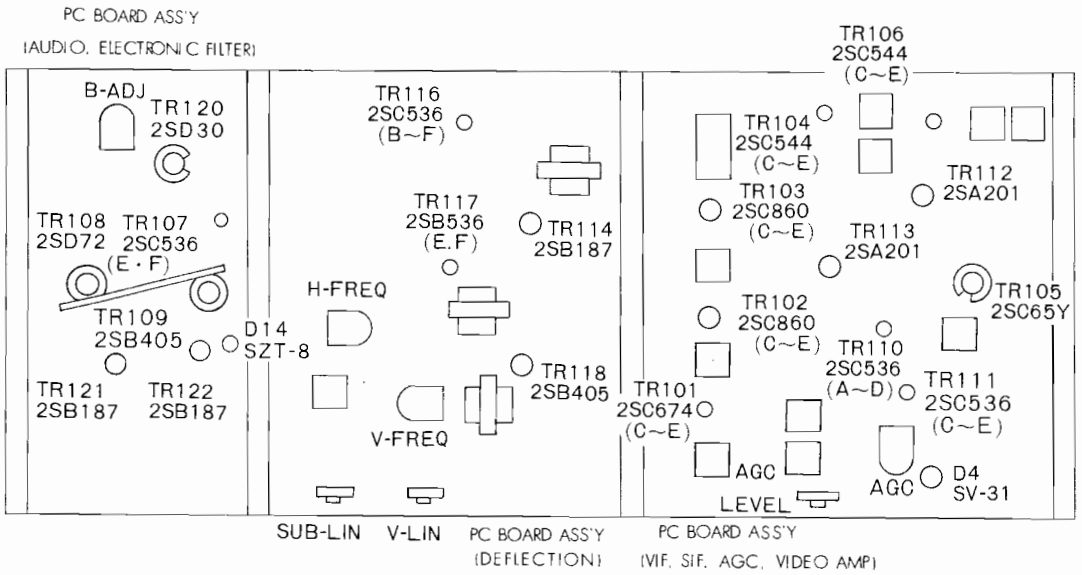


Fig. 4

6. ADJUSTMENTS

IMPORTANT NOTICE BEFORE SERVICING

READ CAREFULLY THE FOLLOWING NOTES BEFORE ATTEMPTING TO TEST OR SERVICE THIS TRANSISTORIZED RECEIVER. AS WITH ANY TRANSISTORIZED DEVICE, FULL CARE MUST BE TAKEN NOT TO OVERLOAD ANY PART OF THE CIRCUITRY.

1. Make sure that the DC voltage at P9 is 12±0.3 volts. If not, adjust the Power B-Adjust Control (R813) to obtain this DC voltage with AC supplied to the set.
2. When servicing, make certain the AC power line voltage does not exceed 10% more than rated voltage.
3. When servicing or testing the set, remove the 1.5 Ampere fuse from its holder and connect a DC ammeter across the terminals to see that the current does not exceed 1.5 Ampere during AC operation.
4. When adjusting deflection circuit, including the horizontal frequency and horizontal stabilizer control adjustment described below, AC line voltage must be at local voltage.
5. When varying horizontal frequency, do not deviate more than ±800 Hz from the rated center frequency of 15.625 MHz.
6. Do not discharge, arc or meter the 2nd anode lead of the picture tube in an attempt to protect the transistors. Disconnect the lead and discharge only the anode, if necessary. Refer to the following paragraph when checking high voltage.
7. While the receiver is in operation, do not attempt to disconnect the lead wires from the printed circuit board assemblies.
8. When replacing parts in the receiver, make sure the power supply cord is disconnected.
9. When the power is on, do not attempt to short any portion of the circuitry. Such shorting may damage the transistors in the set.

FOCUS ADJUSTMENT

Focus adjustment terminal is located near the terminal of flyback transformer marked 1, 2 and 4. Connect the white lead from the picture tube socket into the one of the 3 terminals which provides the best focus.

DEFLECTION YOKE CENTERING RING ADJUSTMENT

1. The deflection yoke clamps onto the neck of the picture tube.
   Loosen the screw on this clamp, and carefully move the yoke as far forward as possible on the neck of the picture tube.
   Rotate the yoke until the top and bottom edges of the raster squared with chassis.
   Tighten the screw.
2. Center the raster horizontally and vertically, and eliminate shaded corners by simultaneously, but independently, rotating the centering rings until the best effect is obtained.

HORIZONTAL FREQUENCY AND HORIZONTAL STABILIZER CONTROL ADJUSTMENT

1. Tune the set to an active channel.
2. Rotate the horizontal hold control (R804 3K) fully counterclockwise.
   Set the horizontal frequency control (R810 10K) to the center of its range.
3. Adjust the horizontal stabilizer coil (L110) to obtain 12 bars slanted to the right on the screen.
4. Adjust the horizontal frequency control (R810 10K) to obtain 12 bars slanted to the left with the horizontal hold control in its fully counter-clockwise position, and the same numbers of slanted bars (or 1 or 2 less), to the right, with the horizontal hold control in its fully clockwise position.

VHF TUNER ADJUSTMENT

If the range of the VHF fine tuning control is not sufficient for tuning in a clear picture on one or more channels, the oscillator cores require adjustment.

1. Set the VHF fine tuning control to the center of its range.
2. Adjust the oscillator core with a non-metallic aligner to obtain the best picture condition, beginning with highest channel and working down. Do not press the oscillator core too hard durdng this adjustment.

HIGH VOLTAGE

To check high voltage, measure across the terminal of flyback transformer marked 2. Correct voltage is 280 volts.

7.ALIGNMENT PROCEDURE

PREPARATION

Alignment is an exacting procedure and should be undertaken only when necessary.
The following equipment is required in alignment work.

1. A Signal generator with an output of at least 0.1 volt, having a frequency range that covers VHF, UHF, VIF and 5.5MHz.
2. An RF sweep generator with a frequency range covering VHF and a sweep width of at least 10MHz; it must have an adjustable output of at least 0.1 volt.
3. A Vacuum tube volt meter (VTVM).
4. A Cathode ray oscilloscope, preferably with a wide frequency vertical amplifier and voltage calibrator.
5. An isolation transformer. It is best to connect the receiver to an isolation transformer during alignment. Allow at least 15 minutes for the set to warm up before attempting alignment.

VIDEO IF TRANSFORMER & TRAP ADJUSTMENT

1. Test Equipment Connections :
   Sweep generator ····· Connect to S15 in series with 0.005 mfd capacitor.
   Signal generator ····· Connect loosely to sweep generator output lead, to provide marker.
   Oscilloscope ····· Connect to VIF detector output at TP-C, in series with a 10K ohm resistor.
2. Adjustment :
   2-1. Turn channel selector to non-active channel.
   2-2. Rotate the AGC LEVEL control (R811) fully clockwise, then adjust the AGC control (R812) to obtain 0.4 — 0.45 volt at TP-B.

	STEP	SIGNAL GENERATOR	ADJUST	REMARKS
1	Adjust 33.4MHz	33.4MHz	L103	Adjust for minimum output of 33.4MHz signal.
2	Adjust 39.4MHz Trap	39.4MHz	L102	Adjust for minimum output of 39.4MHz signal.
3	Adjust Video IF Transformer	3.5 MHz	VIF-1, 2, 3 and 4	Adjust for response curve shown in Fig. 7-A.

SWEEP ALIGNMENT OF VIDEO IF

1. Test Equipment Connections :
   Sweep generator ····· Connect to VHF antenna input terminal.
   Signal generator ····· Connect loosely to sweep generator output lead, to provide marker.
   Oscilloscope ····· Connect to VIF detector output at TP-C, in series with a 10K ohm resistor.
2. Adjustment :
   2-1. Turn channel selector to a non-active channel and set the fine tuning knob to mid-position.
   2-2. Rotate the AGC level control (R811) fully clockwise, then adjust the AGC control (R812) to obtain 0.4 — 0.45 volt at TP-B.
   2-3. Turn channel selector to channel of no interference and set fine tuning to mid-position.
   2-4. Observe the over-all response curve on the oscilloscope.
   2-5. Connect signal generator and adjust VIF-1, 2, 3 and 4, and the tuner mixer collector coil (IFT) so that marker positions are as shown in Fig. 7-B. During this alignment, adjust the output of the sweep generator so that the waveform on the oscilloscope does not exceed 2 volts p-p.
   2-6. Readjust the AGC control (R812) to obtain 0.4 —0.45 volt at TP-B, then tune in a picture and readjust the AGC level control (R811) to obtain the best picture quality.

SOUND ALIGNMENT

1. Test Equipment Connections :
   Signal generator ····· Connect to TP-C and TP-D in series with a 0.005 mfd capacitor.
   Vacuum tube volt meter ····· Connect to TP-E and TP-F.
2. Adjustment :

	STEP	SIGNAL GENERATOR	ADJUST	REMARKS
1	Adjust SIF-3	5.5MHz	SIF-3	Adjust for 0 volt, reading across TP-E and chassis.
2	Adjust SIF-1, 2	5.5MHz	SIF-1, 2	Adjust for the maximum reading across TP-F and chassis (approx. 0.9 volt).
3	Repeat step 1	5.5MHz		Connect signal generator to TP-C
4	Adjust L106	5.5MHz	L106	Adjust L106 for minimum beat in picture.

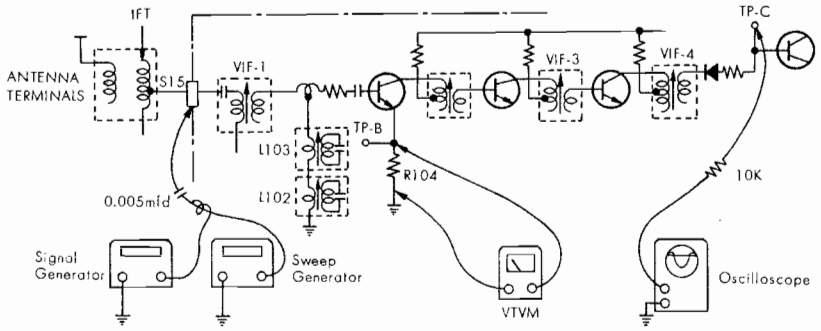


Fig. 5 Outline Diagram of VIF Circuit

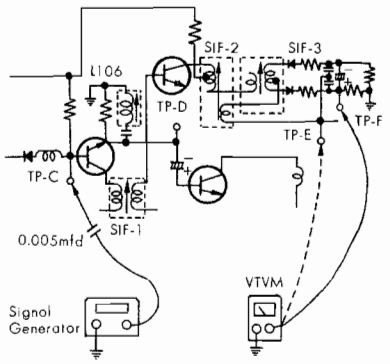


Fig. 6 Outline Diagram of SIF Circuit

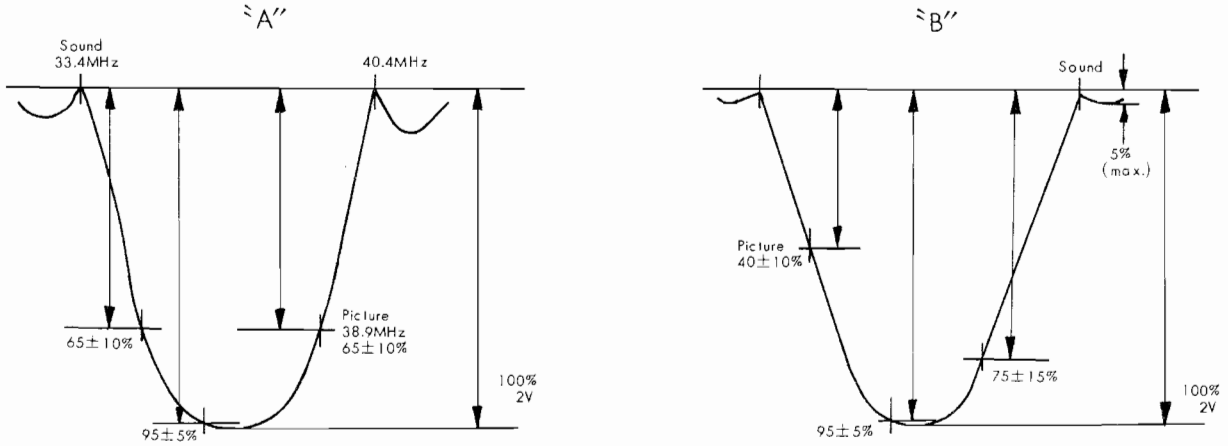


Fig. 7 Response Curve for Alignment of VIF

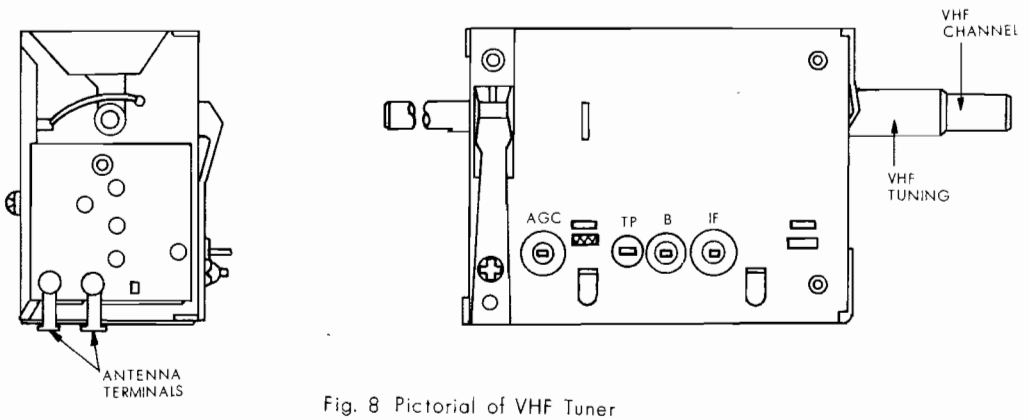
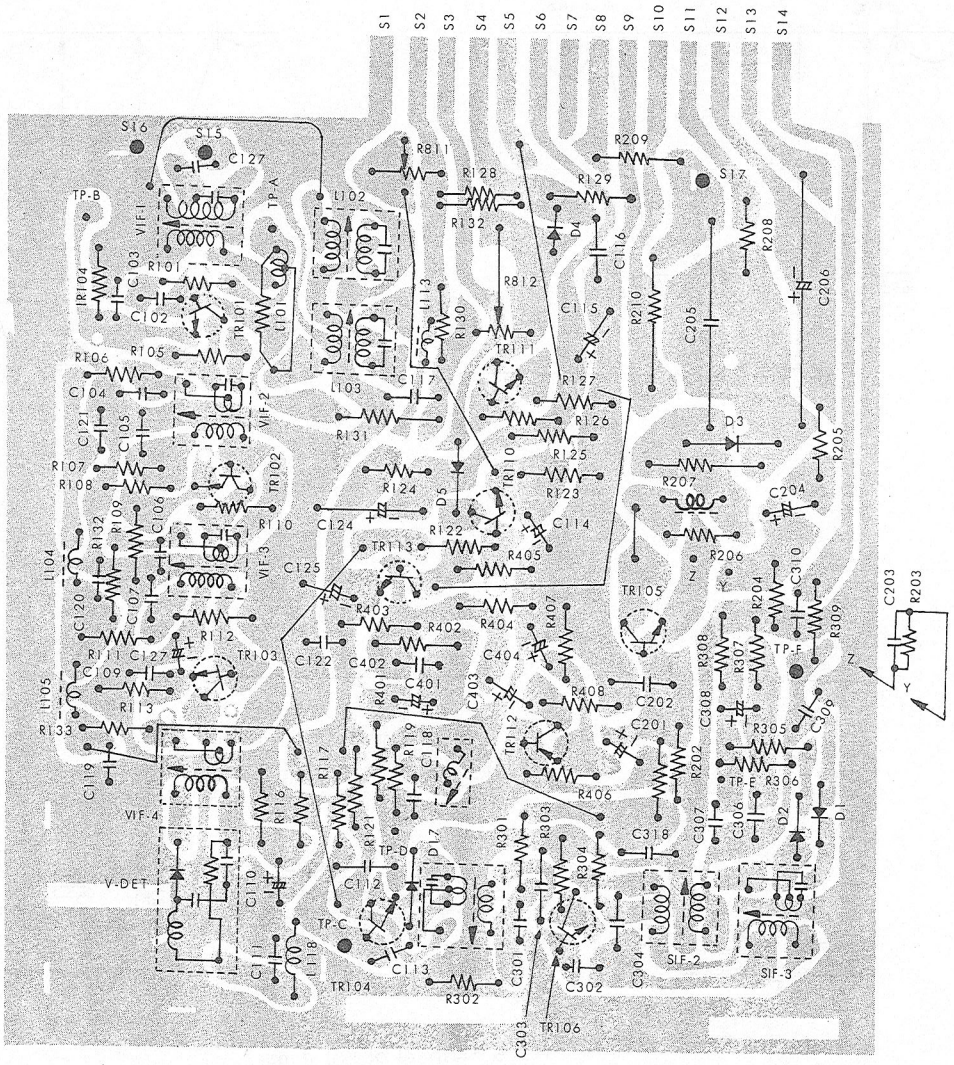


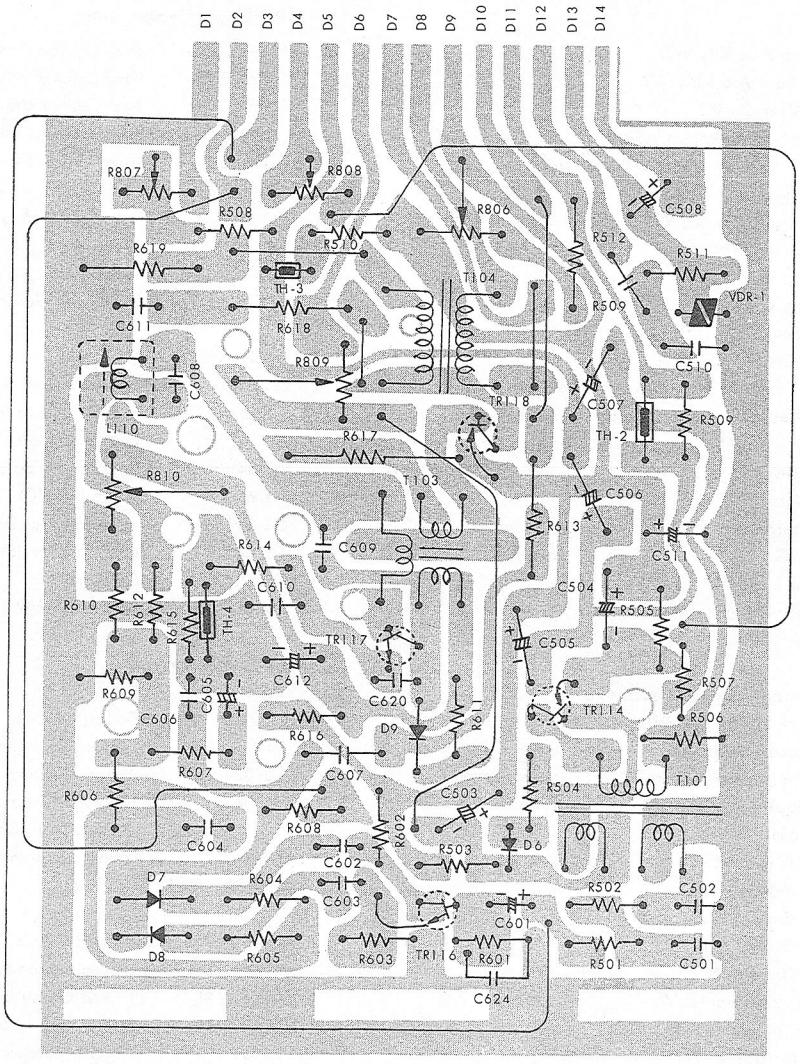
Fig. 8 Pictorial of VHF Tuner

8. WIRING DIAGRAMS

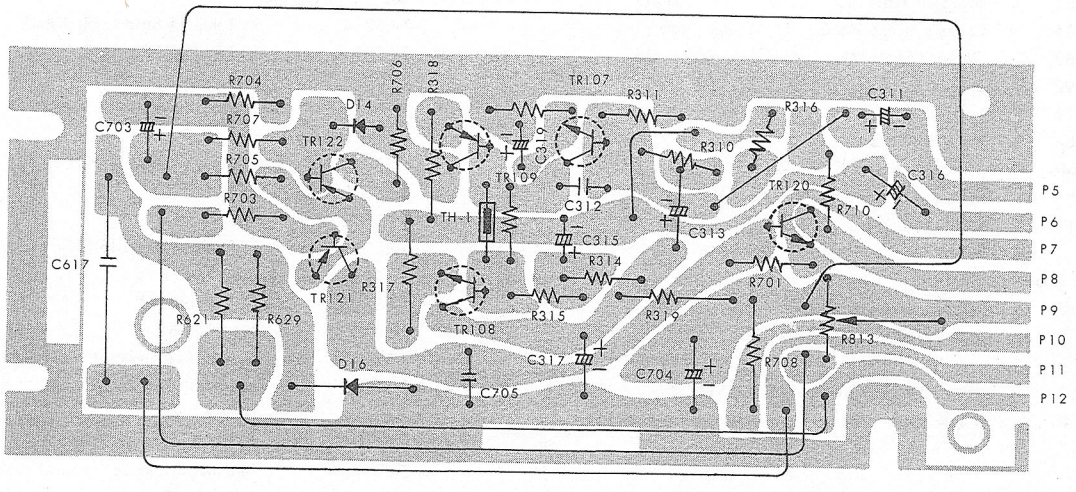
8. 1 Signal PCB Assembly



8. 2 Deflection PCB Assembly



8. 3 Power PCB Assembly



9. REPLACEMENT PARTS LIST

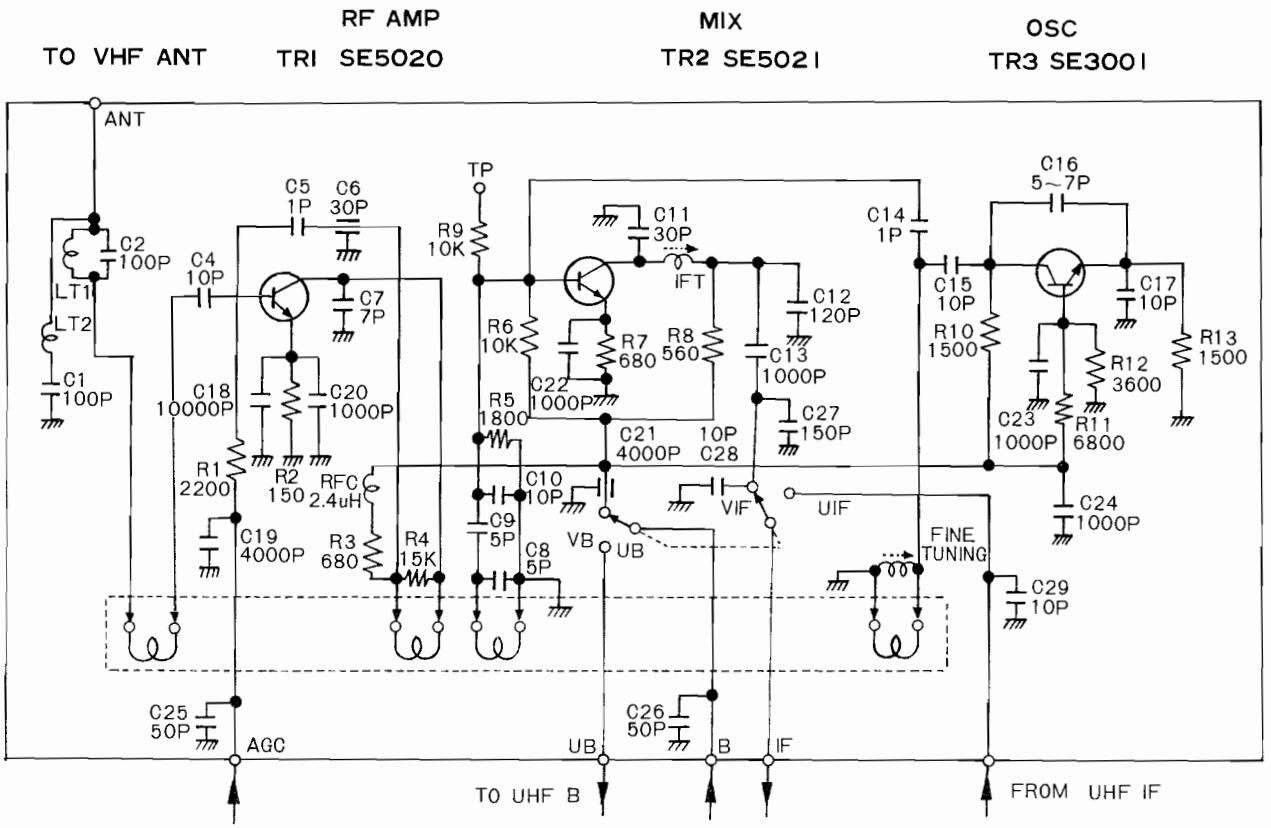
Stock No.	Description	Note
Cabinet Assembly		
GT-Y4017	Escutcheon Assembly WLV	
GT-Y4558	Cabinet Back Assembly WLV	
T-Y3096	Handle Assembly VG	
T-112966	Handle Mounting Bracket VG-A	left
T-112967	Handle Mounting Bracket VG-B	right
T-113055	CRT Mounting Bracket VL	
T-140283	Shield Mounting Spring WL	safety shield
T-160287	CRT Mounting Wire RG	
T-230150	Grounding Chip VL-B	
T-230154	Grounding Chip WL	
T-250299	Handle Shaft VG	
T-312636	Speaker Grille WL	
T-312678	Plug Guide Cover WL	cabinet back
T-320674	Knob Sheet TZ	VHF knob
T-320799	Protective Film WL	safety shield
T-360396	CRT Cushion HQ	
T-360509	CRT Cushion PE	
T-360522	Rubber Band ML	AC cord
T-360706	Spacer VG	handle mounting
T-343645	Insulation Label TS	
T-312638	Safety Shield WL	
Chassis Mechanical Parts		
T-Y1660	Printed Board Stoppr Assembly VG	
T-111953	Capacitor Holder JQ-GHA	
T-112344	Trans Mounting Base ML	power trans.
T-112390	Terminal Mounting Bracket RG	antenna terminal
T-112731	Trans Mounting Bracket TC	power trans.
T-112918	Chassis VH	
T-113057	Chassis Frame WL-A	right
T-113058	Chassis Frame WL-B	left
T-113061	Chassis Bracket WL-A	
T-113062	Chassis Bracket WL-B	
T-113063	Chassis Bracket WL-C	
T-113064	Plug Mounting Bracket WL	
T-113065	VR Mounting Bracket WL	
T-113090	Capacitor Holder WL	
T-111504-T	Trans Hold Band HW-T	power trans.
GT-11404	Tuner Mounting Bracket WLV	
T-160331	Wire Holder VG-A	
T-240259	Connecting Tip HW	
T-261481	Radiator Plate TC	small
T-261645	Chassis Frame WL-C	top
T-311983	Connect Shaft MJ	H-hold
T-312192	printed Board Slide Rail QC	
T-312370	Insulation Bush A	
T-320784	Wire Band VG-A	
GT-34546	Insulation Board Fiber WLV-A	
T-Y1668	FBT Mounting Bracket Assembly WL	
T-320785	Wire Band VG-B	
Control Knobs		
GT-K046	VHF Knob Assembly WLV	
GT-K027	fine Tuning Knob Assembly SG	
T-K977	Small Knob Assembly WL-A	ON-OFF/VOL
GT-K047	UHF Indicator Drum Assembly WLV	
T-312640	Small Knob WL-B	front control

Stock No.	Description	Note
Packing Components		
T-Y6859	Inner Cushion Assembly WL	
T-360704	Inner Cushion WL-A	right
T-360705	Inner Cushion WL-B	left
T-320567	Individual polyethylene Tube KS	AC cord cover
T-344183	Inner Cushion WL	bottom pad
T-344184	Tarpaulin Cover WL	cabinet
GT-34558	Individual Corrugated Case WLV	
T-344266	Outer Corrugated Case WLZ	
T-344267	Tarpaulin Cover WLZ	outer case
T-350371	Inner Cloth Cover WL	cabinet
Accessories		
GT-6570	Printed Matters Assembly WLV	
T-320311	Envelope for printed Matters HW-SR	
GT-34555	Owner 's Manual WLV	
GT-34556	Schematic Diagram WLV	
T-J1622	Spare Fuse TCY	
GT-34554	Parts Location Diagram WLT	
T-J3008	Loop Antenna ZSY	
T-J4106A	Earphone Ea	
GT-34457	Guarantee WLV	
Electrical Components		
T-A93	Linearity Coil	L114
T-D82	Deflection Yoke	L109
T-F73A-315	Flyback Transformer	T105
T-J1037	Antenna Terminal WL	VHF
T-L7062	Horizontal Filter Choke	L112
	peaking Coil (330uH)	L117
T-P34EE	Power Transformer	T106
4-1151-64120	U-V Tuner	
T-V1009	Speaker	
T-W28A	Vertical Output Coil	T102
T-U22018EF	Printed Circuit Board Assembly (VIF, SIF, AGC)	
T-U22019E	Printed Circuit Board Assembly (Deflection)	
T-U22025A	Printed Circuit Board Assembly (Audio, Regulator)	
T-L7095	Antenna Matching Trans.	
T-J1035	Antenna Terminal VG	
O-9131-04270	AC Cord	
T-L501	UHF Matching Trans.	
Socket, Pulgs, etc.		
T-E5214	3P Terminal Strip (3PR10HB-U)	
T-E5224	6P Terminal Strip (6PR10H-U)	
T-E0336	Earphone Jack	
T-E5023	Fuse 0.3A	
T-E5015	Fuse 1.5A	
T-E5211	1P Terminal Strip (1PR10HA-U)	
T-E3023	CRT Socket	
T-E0462	Fuse Holder	
T-E5229	5P Terminal Strip (5PR10HA-U)	
T-E4517	Rod Antenna	
T-E3047	AC Adaptor MP	
T-E0077	4p AC Plug	
T-E3059	10P Multi Connector	
T-E3057	14P Multi Connector	
T-E3708	1P Plug	
T-E5207	4P Terminal Strip (4PR10H-U)	
T-E3035	Terminal Socket E	
T-E6019	UL Sleeve C	
T-E3029	Terminal Socket C	UHF Feeder
T-E6009	Insulation Sleeve KT	UHF Feeder

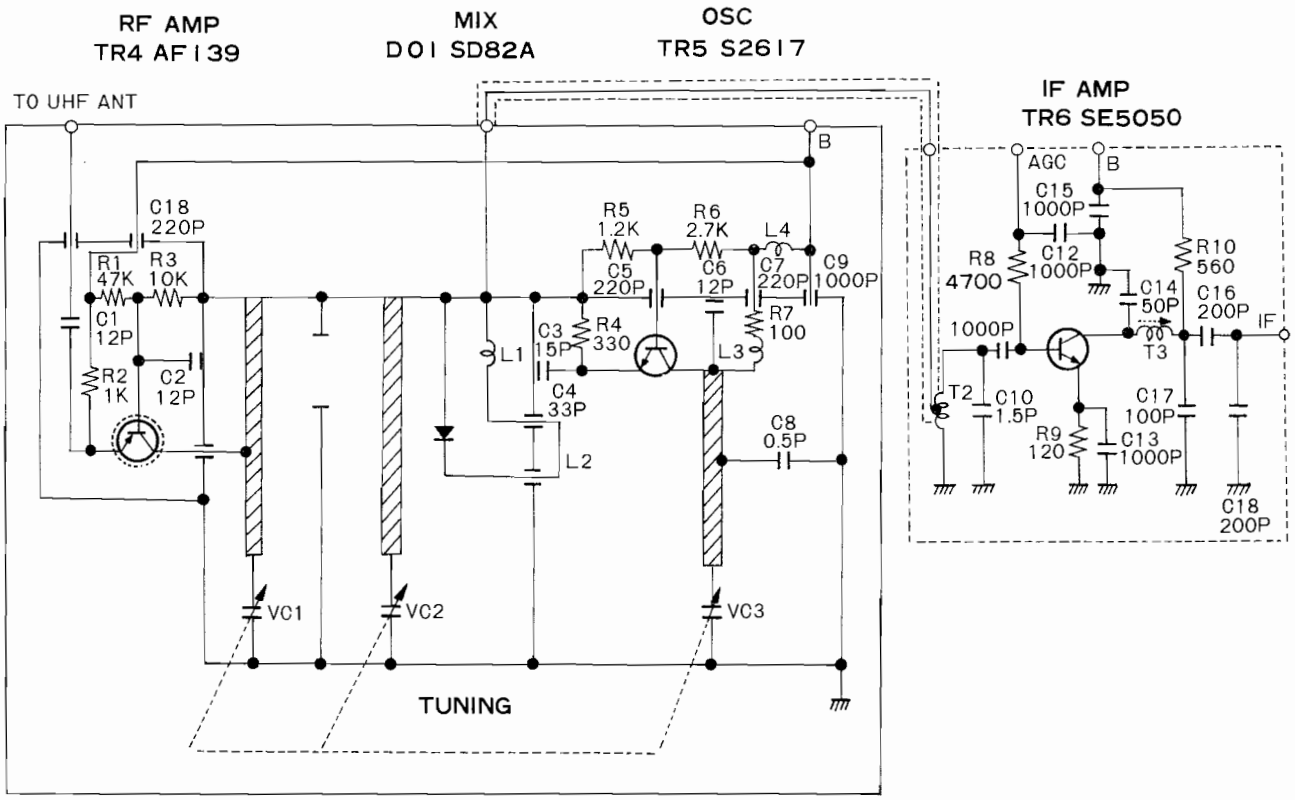
Stock No.	Description	Note
Variable Resistors		
T-G1603	18FRH16LQ B-500K	RB03
T-G1605	18FRN16LQ B-3K	RB04
T-G1610	18FRN16LQ C-500	RB02
T-G1616	18FRN16LQ B-5K	RB05
T-G1604	24FRQ16LQ A-10K	RB01
Fixed Capacitors		
CC61K27SL	Ceramic, 27pf ±%	VHF Antenna
CC62K150SL	150pf ±10%	C623
CC6400M2000YY2K	0.002mfd ±20%, 2K	C706, C707
60CM01	0.01mfd ±20%, 600V	C619
60CJ068	0.068mfd ±5%, 600V	C613
5LK7	Lacquar, 7mfd ±10%, 50V	C615
5MF1	Mylar film, 0.1mfd ±20%, 50V	C320
T-C7072	Electrolytic, 5mfd, 25V	C126
T-C7084	470mfd, 25V	C614
150CT50	50mfd, 150V	C706
300CT3	3mfd, 300V	C618
T-C8142	2000mfd, 20V	C702
T-C8150SNZ	2200mfd, 35V	C701
Fixed Resistors		
1/2CK220	220 ohm ±10%, 1/2W	R320
1/2CK2.7K	2.7K ohm ±10%, 1/2W	R620
1/2CK33K	33K ohm ±10%, 1/2W	R628
1/2CK120K	120K ohm ±10%, 1/2W	R634
1/2CK150K	150K ohm ±10%, 1/2W	R631
1/2CM47	47 ohm ±20%, 1/2W	R635
1/2CM470	470 ohm ±20%, 1/2W	R623
1/2CM10K	10K ohm ±20%, 1/2W	R633
1/2CM33K	33K ohm ±20%, 1/2W	R624
1/2CM100K	100K ohm ±20%, 1/2W	R711
1/2CM150K	150K ohm ±20%, 1/2W	R626
1/2CM330K	330K ohm ±20%, 1/2W	R627
1/2CM470K	470K ohm ±20%, 1/2W	R625
2XPK330	Carbon film, 330 ohm 2W	R709
5WLJ20	Wirewound, 20 ohm ±5%, 5W	R702
Semiconductors and Tube		
T-Q5064	2SB407 (Red)	TR123
T-Q5064	2SB407	TR115
T-Q5030	2SA375A (Black)	TR119
T-E1045	DG-13	D10
T-E1029	SD-1AHF	D11
T-E1064	SD-1BHF	D12
T-E1042	Selen Rectifier HW	D15
T-E1024	Silicon Rectifier 4-4	D13
T-Q9082NS	310DWB4	picture tube
Included in VHF Tuner		
	SE5020	TR1
	SE5021	TR2
	SE3001	TR3
Included in Video Detector (T-S1045)		
T-E1031	1S188	
or T-E1014	1N60	
Included in PC Board Assembly (VIF, SIF, AGC, Video Amp)		
T-Q5020	2SA201 (Blue)	TR113
T-Q5020	2SA201	TR112
T-Q5063	2SC65Y	TR105
T-Q5053	2SC536 (A-D)	TR110
T-Q5053	2SC536 (C-E)	TR111
T-Q5054	2SC544 (C-E)	TR104, TR106
T-Q5055	2SC674 (C, D, E12	TR101
T-Q5065	2SC860 (C-E)	TR102, TR103
T-E1031	1S188	D1, D2, D5, D17
T-E1091	SV-31	D4
T-E1097	SD-1AUF	D3
Semiconductors and Tube		
Included in PC Board Assembly (deflection)		
T-Q5027	2SB187	TR114
T-Q5061	2SB405 (Red, Orange, Yellow, Green)	TR118
T-Q5053	2SC536 (B-F)	TR116
T-Q5053	2SC536 (E,F)	TR117
T-E1031	1S188	D6, D7, D8, D9 (Green)
T-E1036	SDT-06	TH-2, TH-4
T-E1038	SDT-20	TH-3
T-E1043	TVL-1	VDR-1
Included in PC Board Assembly (Audio, Regulator)		
T-Q5027	2SB187	TR121, TR122
T-Q5061	2SB405 (COMP) (Red, Orange, Yellow)	TR109
T-Q5062	2SD72 (COMP) (Red, Orange, Yellow)	TR108
T-Q5053	2SC536 (E,F)	TR107
T-Q5039	2SD30	TR120
T-E1077	SDT-8	D14
T-E1029	SD-1AHF	D16
T-E1036	SDT-06	TH-1
Included in UHF Tuner		
	AF139	TR4
	SD82A	D01
	S2617	TR5
	SE5050	TR6

11. Schematic Diagrams

11. 1 VHF TUNER

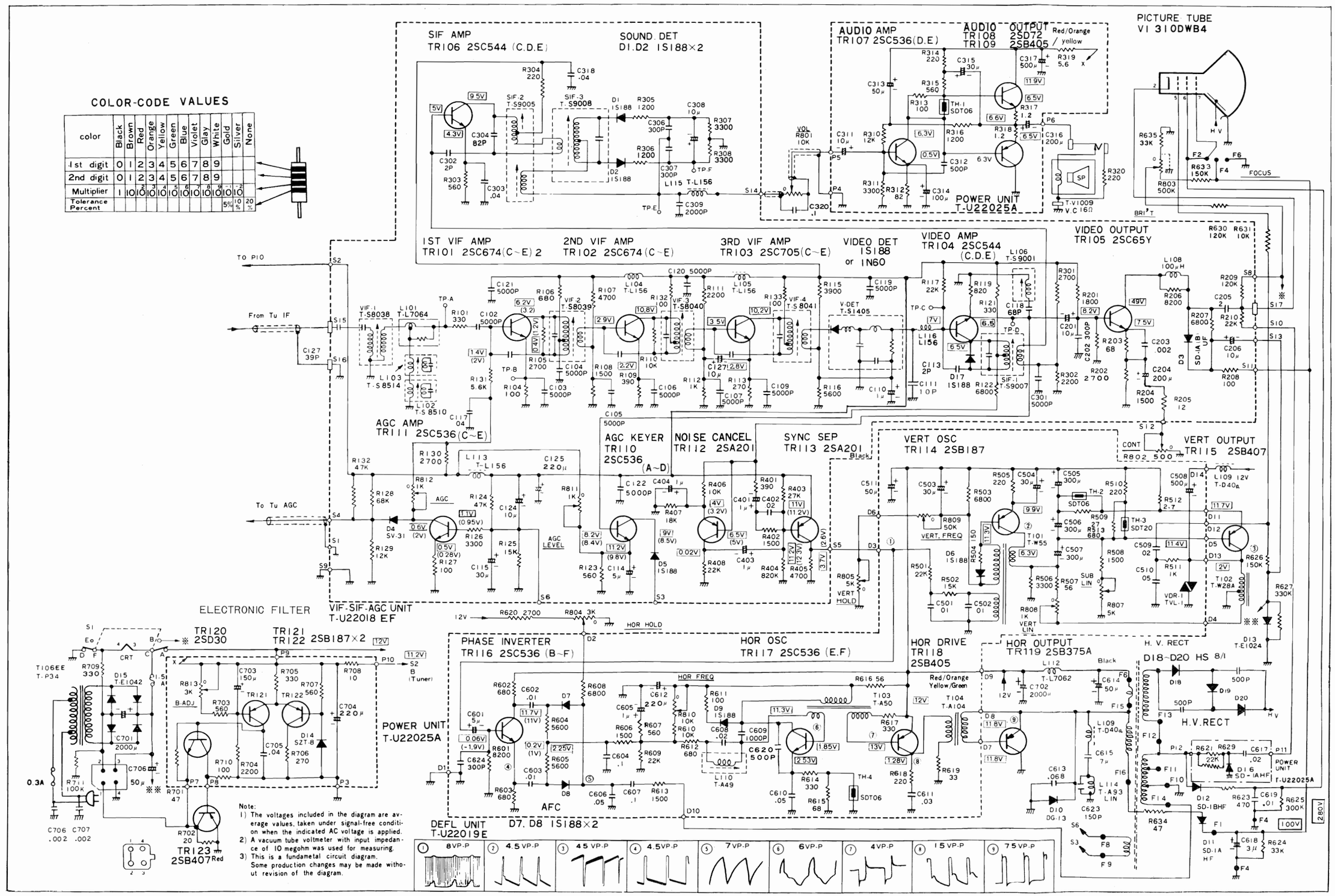


11. 2 UHF TUNER



COLOR-CODE VALUES

color	Black	Brown	Red	Orange	Yellow	Green	Blue	Violet	Gray	White	Gold	Silver	None
1st digit	0	1	2	3	4	5	6	7	8	9			
2nd digit	0	1	2	3	4	5	6	7	8	9			
Multiplier	1	10	10^2	10^3	10^4	10^5	10^6	10^7	10^8	10^9	10^{-1}	10^{-2}	
Tolerance Percent											5%	10%	20%



Teleton

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